

10/27/03

**POROUS POLYVINYL ALCOHOL HYDROGEL MICROSPHERE**

Patent Number: JP62045637  
Publication date: 1987-02-27  
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Requested Patent: ☐ JP62045637  
Application Number: JP19850186469 19850824  
Priority Number(s):  
IPC Classification: C08J9/28  
EC Classification:  
Equivalents:

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**Abstract**

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**PURPOSE:**The titled microspheres of a high strength, a high modulus and a high water content, obtained by freezing an aqueous PVA solution in the form of water drops dispersed in a specified dispersing medium and crystallizing the polymer at a low temperature.

**CONSTITUTION:**An aqueous PVA solution kept in the form of water drops is obtained by pouring an aqueous solution containing 5-40wt% PVA of a degree of saponification  $\geq 95\text{mol}\%$  and an average degree of polymerization  $\geq 1,000$  into a dispersing medium such as a water-immiscible organic solvent (e.g., benzene) or an oil (e.g., silicone oil) with agitation at a speed of 200rpm. This aqueous PVA solution is frozen by cooling to  $-5\text{ deg.C}$  or below for at least 5hr, and the polymer phase of PVA is isolated to obtain a frozen-phase molecular structure. This structure is left standing at  $0-10\text{ deg.C}$  for at least 10hr to crystallize the polymer phase. In this way, high-strength, high-water content, porous PVA gel microspheres of a diameter of  $0.1\mu\text{m}-1\text{mm}$ , a pore diameter of  $0.01-50\mu\text{m}$ , a water content of 40-95wt% and a compressive strength  $\geq 10\text{kg/cm}^2$  are obtained.

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